

## GENERAL DESCRIPTION:

The 20626 is a dual power supply with independent adjustable positive and negative output voltages. A separate adjustment for each of the supplies provides the user unlimited applications for IC circuit voltage requirements. The supply can also be used as a general all purpose variable power supply.

- Adjustable regulated power supplies positive and negative 1.2VDC to 15VDC
- Power output (each supply):  
5VDC @ 500mA, 10VDC @ 750mA, 12VDC @ 500mA and 15VDC @ 175mA
- Two, 3-terminal adjustable regulators with thermal overload protection
- Heat sink regulator cooling

## PARTS LIST:

Component Reference	Part Number	Product Description	Quantity
IC1	23579	Regulator, Adj Pos., LM317T	1
IC2	23819	Regulator, Adj Neg., LM337T	1
C1, C2	11033	Capacitor, Elec, 2200MF, 16V	2
C3, C4	33662	Capacitor, Tan, 1MF, 35V	2
CR1, CR4	35975	Diode, 1N4001	4
LED1	34796	LED Display, XC556R	1
R1	29655	Resistor, 1/4 W, 1K (BRN-BLK-RED)	1
R2, R5	30251	Resistor, 1/4 W, 180 OHMS (BRN-GRY-BRN)	2
R3, R4	35502	Potentiometer, Adj, CRL 2.5K	2
P1	42041	Power cord, 2 conductor	1
T1	29225	Transformer, P8130 or EQ	1
	42622	Heat sink, THM 6030 or EQ	2
	20642	Printed wiring BD JE215-1	1
	40969	Screw, PH 4-40 x 3/8"	2
	42446	Screw, PH 6-32 x 3/8"	6
	42462	Washer, LK #6	2
	40942	Nut, Hex 4-40	2
	42420	Nut, Hex 6-32	10
	32011	Bumper feet, SJ5012 or EQ	4
	20634	Kit instructions for 20626 (JE215)	1

All above components may be purchased separately from Jameco using the 5-digit part number.

## ASSEMBLY PREPARATION AND PROCEDURES:

1. Important: Identify all parts on parts list before proceeding.
2. Suggestion: Simulate board assembly by placing the components in their actual place on the picture assembly, then transfer components to the actual board during assembly.
3. Tools required:
  - Small soldering iron, 27W to 35W
  - Resin core solder, .03" Dia. SN60 or SN63. Do not use acid core type or 50/50 solder.
  - Small sponge (water dampened) for cleaning solder tip
  - Small wire cutter/stripper
  - Small long nose plier
  - Screw driver
  - Plastic electrical tape, 3/4" wide
  - DC meter 0 to 18VDC range

Component wire stripping, bending and lead spreading:

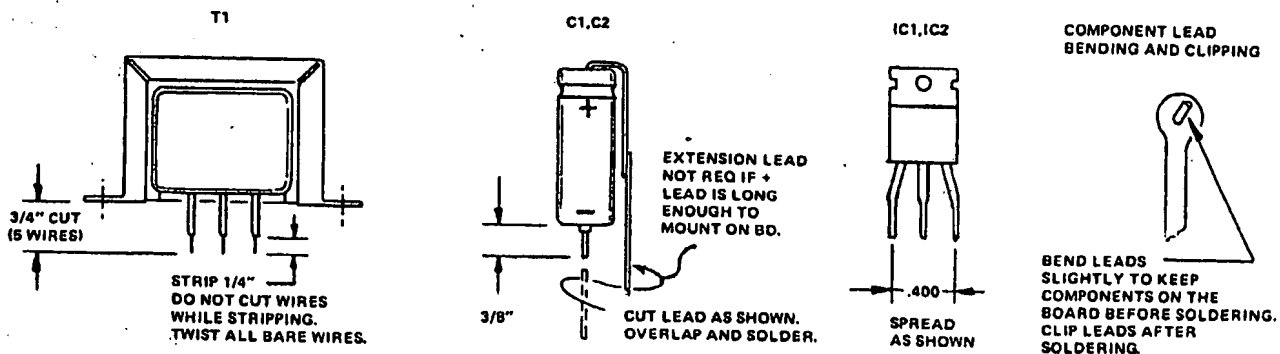


Figure 1

## 20626 (JE215) ADJUSTABLE DUAL POWER SUPPLY KIT

### SOLDERING TIPS:

1. Feed the solder into the space between the iron tip and the solder pad next to the component lead.
2. Leaving the iron tip too long on a pad will cause the pad to lift, as well as damage the component. Allow approx. 2 seconds per solder joint.
3. Using too much solder can cause the solder to bridge across traces and pads.
4. Keep iron tip clean by wiping the tip across a water dampened sponge —frequently.

### ASSEMBLY INSTRUCTIONS:

#### READ ALL THE INSTRUCTIONS BEFORE STARTING.

1. Printed wiring board assembly. See assembly picture.

- 1.1 Start the board assembly by placing the PW board to the position shown on the assembly picture. The etched foil on the board will be on the back side.
- 1.2 Insert diodes CR1 thru CR4 as shown. The polarity band on each of the diodes must be placed as shown on the assembly. Mount all diodes 1/8" above the board. Solder and clip leads.
- 1.3 Insert resistors R1, R2, and R5. Be sure that the color coded values are properly placed. Solder and clip leads.
- 1.4 Insert capacitors C3, and C4. Be sure that the (+) lead on each of the capacitors is placed correctly into the board. Solder and clip leads.
- 1.5 Install transformer T1 by first inserting the leads into the board before securing it down with the hardware. The CT (center tap) lead is different in color in this group of 3 wires and must go into the hole marked "CT"
- 1.6 Insert regulators IC1 and IC2. Push leads about 1/8" into the board. Do not solder as yet. Be sure the correct IC is placed into the correct location.
- 1.7 Install the heat sinks behind the ICs as shown. Push the heat sink into the holes. Allow 1/8" air space between the bottom of the heat sink and the top of the board. Secure ICs to heat sink with No. 4 hardware. Solder IC leads and clip leads as required.
- 1.8 Insert capacitors C1, and C2. Be sure that the polarity leads are properly placed. Push the capacitors against the board and bend each lead 90 degrees. Clip leads about 1/8" long (under board) and solder.
- 1.9 Insert light emitting diode LED1. Note the (-) polarity lead placement. Adjust the bottom of the LED to approx. 3/4" above the board. Solder and clip leads.
- 1.10 Insert adjustable resistors R3 and R4. All leads must first be straightened before installing. Mount resistor body flush on board. Solder and clip leads.
- 1.11 Install jumper wire JW1 as shown. Use clipped component lead wire. Solder and clip leads.
- 1.12 Strip power cord P1 insulation back about 1/4". Twist wire leads and insert into location as shown. Bend twisted leads flush against foil pads and solder. As a safety precaution against electrical shocks, place two layers of 3/4" wide plastic electrical tape over the 120VAC input traces. A cable clamp may be used, secured by the transformer to relieve the strain on the power cord leads.
- 1.13 Insert 4 No.6 screws from the bottom of the board for the output terminals as shown. Tighten the first nut (4) on top of the board. Hand tighten the second nut (4) over the first.
- 1.14 Place bumper feet (4) approximately as shown to the bottom of the board.
- 1.15 Cut power supply identification labels from instruction sheet, then glue or tape on the board as shown.

2. Final assembly check-out:

Do not attempt to plug in the power cord until a final check has been made to verify the correctness of all assembled components. Components IC1 and IC2 will be permanently damaged if their placement is accidentally swapped and diodes CR1 and CR2 will blow if their polarity placement is reversed. Place a check in each of the circles, on the assembly picture, as you go over each component placement of the four items stated.

### POWER SUPPLY VOLTAGE ADJUSTMENT:

1. The 20826 (JE215) power supply voltage can be varied by turning adjustable resistors R3 for positive supply and R4 for negative supply. Use a DC voltage meter for correct voltage setting.
2. For dual adjustable positive (or dual negative) outputs, reverse leads on one of the supplies. However when used in this manner, each of the loads must be in separate use, i.e. not electrically connected together.

### SAFETY NOTES:

1. Never use the power supply on metal surfaces.
2. Allow adequate air ventilation to cool.
3. Unplug power cord when not in use.

## Printed Wiring Board Assembly

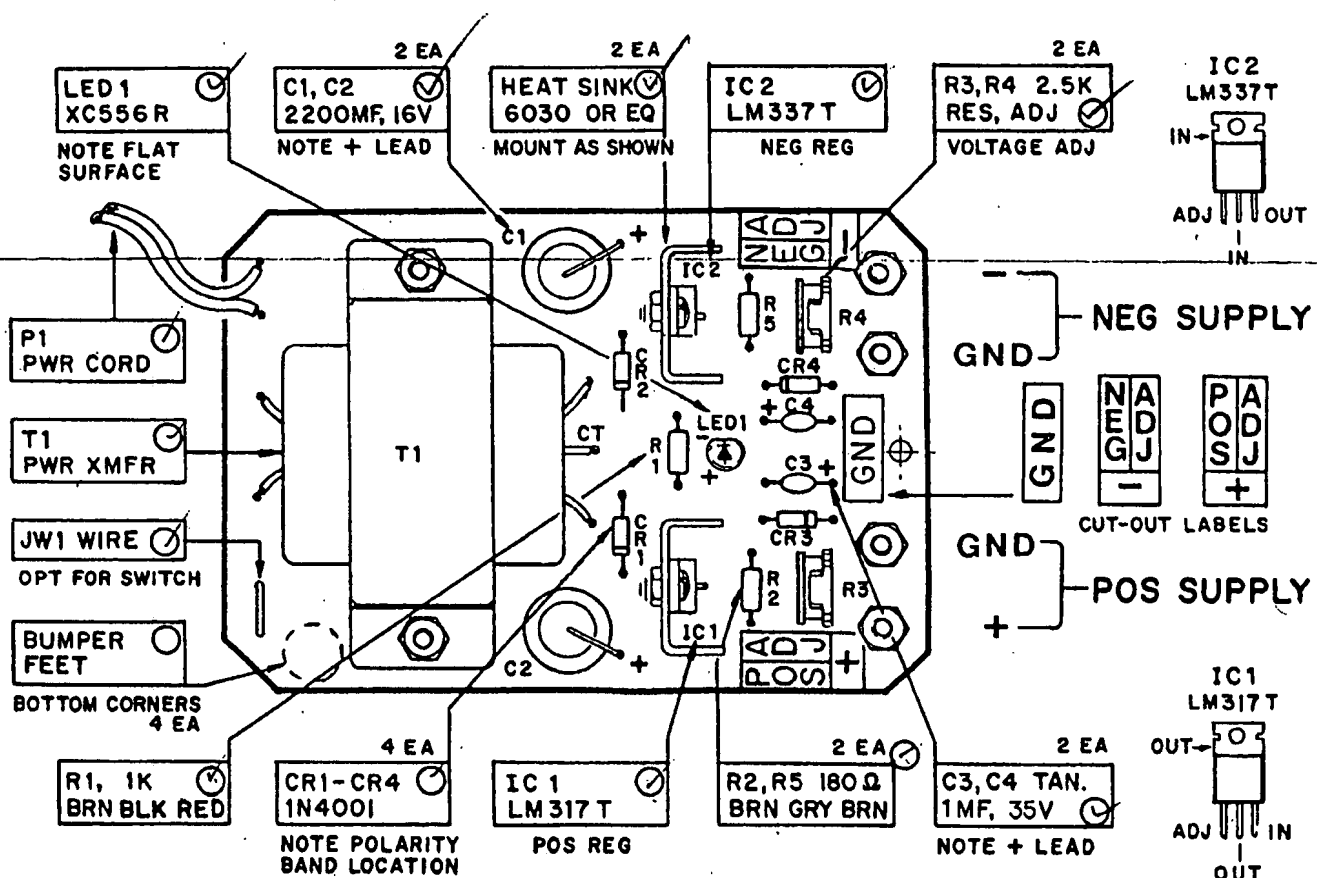


Figure 2

## 20626 (JE215) Power Supply Schematic Drawing

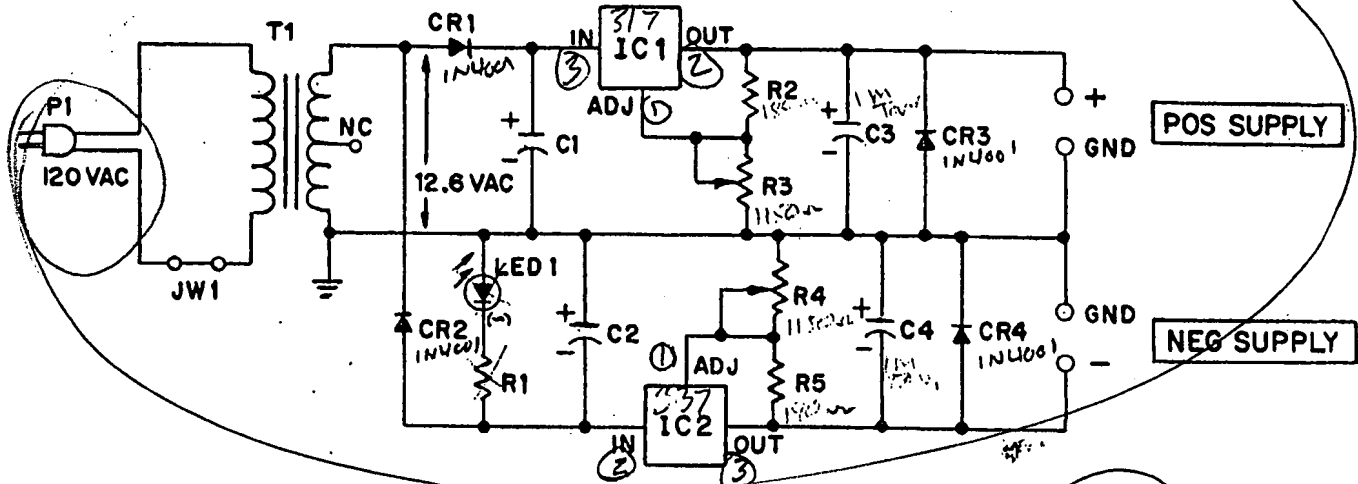


Figure 3

### TROUBLE SHOOTING TIPS:

1. No voltage output across supply terminals:
  - 1.1 A. Check power cord for correct wiring and 115 VAC on printed board pads. B. Check for 12.6VAC on secondary leads of transformer T1. C. Check for improper placement of C1 and C2 —should have approx 18.5VDC when measured across each of the capacitors. D. Diodes CR1, CR2 and CR5 will blow if polarity bands are placed backwards.
2. Everything functions except "LED1" which does not light:
  - 2.1 A. Reverse lead mounting.
3. Output voltage problems:
  - 3.1 Regulators IC1 and IC2 reversed. Possible permanent damage.
  - 3.2 A. Output voltage stays high; open connections in R3 and R4 terminals —check soldering. B. Output voltage stays low and does not change; shorted R3 and R4 terminals —check for solder bridging.
  - 3.3 Output varies and is difficult to adjust —check placement reversal of C3, C4, CR3 and CR4.
4. Output voltage drops under load:
  - 4.1 Check capacitors C1 or C2 for proper value.

### 20626 (JE215) ADJUSTABLE DUAL POWER SUPPLY KIT

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